

REMARKS

Applicants' representative would like to thank Examiner Cumberledge for the courtesies extended during an interview conducted on February 11, 2008. During the interview, Applicants' representative presented arguments to the Examiner that the combination of Perren (U.S. Pat. No. 5,053,036) and Wing (U.S. Pat. No. 4,790,703) fail to teach or suggest the elements of independent Claims 47, 58, and 65. Specifically, Applicants' representative asserted that each of Perren and Wing fail to disclose a bone fixation apparatus including a fastener shaft having a first portion including an outer surface defining a first cam and an annular member having an inner surface defining a second cam for cooperating with the first cam of the fastener shaft to selectively expand the annular member.

Wing discloses a fastener assembly including a bolt (10), a nut (12), and a barrier washer (14), whereby the bolt (10) includes a tri-lobular threaded shank (16) received generally within a tri-lobular bore (25) of the washer (14) to prevent relative rotation between the threaded shank (16) and the washer (14). See Wing at Col. 5, Ins. 45-50. The tri-lobular threaded shank (16) is received within the nut (12) and deforms the nut (12) such that the deformed nut (12) conforms to the tri-lobular shape of the threaded shank (16). See Wing at Col. 5, Ins. 51-63. In the Office Action, the Examiner asserted that the tri-lobular threaded shank (16) exerts a force on the bore (25) of the washer (14) to expand the washer (14) and engage the nut (12) to retain the nut (12) thereon. Applicants' representative presented arguments to the Examiner that the washer (14) is not expanded by rotation of the tri-lobular threaded shank (16) within the bore (25) of the washer (14) but, rather, relative rotation between the tri-lobular threaded shank (16)

and the bore (25) of the washer (14) is prevented due to the tri-lobular structure of the threaded shank (16) being matingly received within the tri-lobular structure of the bore (25) of the washer (14). The Examiner indicated that if the foregoing characterization of Wing is accurate with respect to the description set forth at Col. 5, Ins. 51-68, and Col. 6, Ins. 1-4, such arguments would likely overcome the outstanding rejections. However, the Examiner indicated that further study of the cited art of record is required. No exhibits were shown or demonstrations conducted.

Claims 47-66 are now pending in the application. By this paper, Claim 65 has been amended. The basis for the foregoing amendments can be found throughout the specification, claims, and drawings originally filed. No new matter has been added. The preceding amendments and the following remarks are believed to be fully responsive to the outstanding Office Action and are believed to place the application in condition for allowance. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 47-54, 56-62, and 64 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Perren et al. (U.S. Pat. No. 5,053,036) in view of Wing (U.S. Pat. No. 4,790,703).

Claims 55, 63, and 65 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Perren et al. (U.S. Pat. No. 5,053,036) in view of Wing (U.S. Pat. No. 4,790,703) in view of Konieczynski et al. (U.S. Pub. 2004/0127899A1).

These rejections are respectfully traversed.

Applicants respectfully submit that the cited art of record fails to teach or suggest a bone fixation apparatus including a fastener shaft having a first portion including an outer surface defining a first cam and an annular member having an inner surface defining a second cam that cooperates with the first cam of the fastener shaft to selectively expand the annular member. Applicants further submit that the cited art of record fails to teach or suggest a bone fixation apparatus including a fastener shaft having a groove including at least one cam surface and an annular member having an inner surface cooperating with the at least one cam surface of the fastener shaft to radially expand the annular member from an unexpanded position to an expanded position.

Perren discloses a plate (21) that receives a spherical insert (30) for selectively locking a screw (32) relative to the plate (21). See Perren at Col. 3, Ins. 59-68, and Figure 6. The screw (32) includes a conical head (27) that compresses the sphere (30) against the plate (21) to lock the screw (32) and sphere (30) in the plate (21). See Perren at Col. 3, Ins. 59-68, and Figure 6. While Perren discloses a screw (32) having a conical head (27), Applicants respectfully submit that Perren fails to teach or suggest a cam surface formed on an outer surface of the screw (32) or a cam surface formed on an inner surface of the spherical insert (30). The Examiner agrees with the Applicants' characterization of Perren at Page 4 of the outstanding Office Action, where the Examiner states that Perren fails to disclose a fastener shaft defining a first cam and an annular member defining a second cam or that such cams cooperate to selectively expand an annular member in a radial direction.

Wing discloses a fastener assembly including a bolt (10), a nut (12), and a barrier washer (14). See Wing at Col. 5, Ins. 29-32, and Figure 1. The bolt (10) includes a tri-lobular threaded shank (16) that is matingly received within a tri-lobular bore (25) of the washer (14) such that when the bore (25) mates with the tri-lobular threaded shank (16), the washer (14) is prevented from rotating with respect to the bolt (10). See Wing at Col. 5, Ins. 45-50. The tri-lobular threaded shank (16) is received in the nut (12) and exerts an outward force on a barrel (28) of the nut (12) to deform the barrel (28) such that the barrel (28) conforms to the tri-lobular shape of the threaded shank (16). See Wing at Col. 5, Ins. 51-68, and Col. 6, Ins. 1-4, and Figures 1 and 5.

The Examiner identifies the bore (25) of the washer (14) as defining a first cam and identifies the tri-lobular threaded shank (16) of the bolt (10) as defining a second cam. The Examiner submits that when the tri-lobular threaded shank (16) is received within the cam (14), the tri-lobular threaded shank (16) engages the tri-lobular shaped bore (25) of the washer (14) to radially expand the washer (14). Applicants respectfully submit that the tri-lobular threaded shank (16) is matingly received within the tri-lobular shaped bore (25) of the washer (14) and, as such, the washer (14) rotates with the tri-lobular threaded shank (16) of the bolt (10). See Wing at Col. 5, Ins. 45-50. Because the washer (14) rotates with the bolt (10), rotation of the tri-lobular threaded shank (16) of the bolt (10) does not and cannot deform the washer (14).

Applicants respectfully submit that the nut (12) is the only portion of the device of Wing that is deformed by the tri-lobular threaded shank (16) of the bolt (10). See Wing at Col. 5, Ins. 45-68, and Figures 1 and 5. Because the barrel (28) of the nut (12) is “essentially circular” in a relaxed state (i.e., when disengaged from the tri-lobular

threaded shank (16)), Applicants respectfully submit that the nut (12) similarly fails to disclose a cam.

With respect to Claim 65, Applicants note that while Konieczynski discloses resilient locking members (70, 170, 270) that are received within seating grooves (28) of apertures (26) of a bone plate (20), the locking members (70, 170, 270) are not carried by a groove formed in a screw (40, 140, 240). Rather, the resilient locking members (70, 170, 270) are attached to and received in the bone plate (20) and, as such, are not disposed in a groove of a fastener shaft. Nonetheless, Applicants have amended Claim 65 to recite a fastener shaft including a groove having at least one cam surface that cooperates with an inner surface of an annular member. Applicants respectfully submit that even if the Examiner broadly interprets Konieczynski as disclosing resilient members (70, 170, 270) that are received within a recess of a screw (40, 140, 240), none of the screws (40, 140, 240) disclose a groove having at least one cam surface—much less a groove having at least one cam surface that cooperates with an inner surface of an annular member to radially expand the annular member.

In light of the foregoing, Applicants respectfully submit that independent Claims 47, 58, and 65, as well as Claims 48-57, 59-64, and 66, respectively dependent therefrom, are in condition for allowance. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

CONCLUSION

It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt

and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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